Customer No. 22,852 Attorney Docket No. 7552.0032-00

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Cancel claims 1-32.

- 33. (New) A non-invasive device for measuring blood temperature in a circuit for the extracorporeal circulation of blood, said device comprising a line for receiving blood from a patient, and a temperature sensor connected to said line and generating a first signal indicative of a blood temperature of the blood flowing in said line, said temperature sensor comprising a device for measuring an intensity of an electromagnetic radiation, and said line comprising a connecting portion facing said measuring device and permeable to electromagnetic radiation in a first wave band; said first signal corresponding to an intensity of said electromagnetic radiation in said first wave band.
- 34. (New) A device according to claim 33, wherein said measuring device is housed within a casing, behind a window formed in said casing; said connecting portion of said line being completely superimposed on said window, to cover a solid angle of view of said measuring device.
- 35. (New) A device according to claim 33, wherein said measuring device comprises a thermopile, having at least one hot junction and at least one cold junction.

- 36. (New) A device according to claim 35, wherein said temperature sensor comprises a temperature controller, said temperature controller maintains the at least one cold junction at a controlled temperature.
- 37. (New) A device according to claim 36, wherein said temperature controller comprises:

a thermistor, connected thermally to the cold junction of said measuring device, said thermistor supplying a second signal, said signal corresponding to said controlled temperature;

a solid state heat pump, having a low temperature surface thermally connected to said measuring device and a high temperature surface; and

a control circuit, connected to said thermistor, to receive said second signal, said control circuit also being connected to said heat pump to supply a control signal correlated with said second signal.

- 38. (New) A device according to claim 37, wherein said heat pump comprises a Peltier cell.
- 39. (New) A device according to claim 37, comprising a heat sink element placed in contact with said high temperature surface of said heat pump.
- 40. (New) A device according to claim 37, wherein said controlled temperature is a constant temperature in the range from 5°C to 15°C.

- 41. (New) A device according to claim 33, wherein said connecting portion is made from a material having a substantially constant transmittance in said first wave band, and said material having an absorbance substantially equal to zero in said first wave band.
- 42. (New) A device according to claim 33, wherein said connecting portion is made from a material having an essentially constant transmittance in a temperature range from 30°C to 40°C.
- 43. (New) A device according to claim 33, wherein said connecting portion is made from a material chosen from a group including high-density polyethylene, low-density polyethylene, and poly(4-methyl-1-pentene).
- 44. (New) A device according to claim 33, further comprising a filter interposed between said measuring device and said connecting portion of said line.
- 45. (New) A device according to claim 44, wherein said filter comprises a sheet of material being substantially opaque to electromagnetic radiation outside a second wave band and lying within said first wave band.
- 46. (New) A device according to claim 45, wherein said second wave band is in a range from 8 μm to 14 μm .
- 47. (New) A device according to claim 45, wherein said filter includes germanium.

- 48. (New) A device according to claim 45, wherein said filter has one face facing said connecting portion of said line.
- 49. (New) A device according to claim 33, wherein an infrared radiation band includes at least a portion of said first wave band.
- 50. (New) A device according to claim 36, comprising a control unit associated with said temperature sensor, for receiving said first signal and for determining said blood temperature according to:

$$T_P = F(V_B) + T_0$$

where T_P is the blood temperature, V_B is the first signal, and T_0 is the controlled temperature.

51. (New) A device according to claim 50, wherein:

$$F(V_B) = K^*V_B$$

where K is an experimentally determined constant.

52. (New) A control apparatus for an extracorporeal blood circuit, said extracorporeal blood circuit being connected to a blood purification machine, said extracorporeal blood circuit further comprising an arterial branch connected to at least one blood treatment element and a venous branch connected to at least one blood treatment element, the control apparatus comprising a non-invasive device for measuring a blood temperature according to claim 33.

- 53. (New) An apparatus according to claim 52, wherein the non-invasive device has a sensor for measuring a first blood temperature of blood leaving a patient along the arterial branch upstream of said blood treatment element, a control unit configured to regulate a blood temperature in the extracorporeal blood circuit as a function of the first blood temperature and a reference temperature, and a device for regulating the blood temperature in the extracorporeal blood circuit, said device being connected to a portion of the venous branch downstream from said blood treatment element.
- 54. (New) An apparatus according to claim 53, wherein said regulating device, is combined with said portion of the venous branch to form a heat exchanger; said control unit being connected to said temperature regulating device.
- 55. (New) An apparatus according to claim 53, wherein said regulating device comprises a line for conveying a fluid which can be heated to a fluid temperature lying within a specified range, about 37° C.
- 56. (New) An apparatus according to claim 53, wherein said regulating device has a seat configured to house said portion of the venous branch.
- 57. (New) An apparatus according to claim 53, wherein said extracorporeal blood circuit is connected to a pump to convey the blood along the extracorporeal blood circuit, the apparatus comprising a sensor for detecting an operating state of the pump; the control unit keeping the fluid temperature substantially equal to said predetermined temperature when the pump is not in operation.

- 58. (New) An apparatus according to claim 53, wherein said venous branch has a post-dilution node; said portion of the venous branch being located downstream of said post-dilution node.
- 59. (New) An apparatus according to claim 53, wherein said blood treatment element comprises a hemodialysis filter, said hemodialysis filter comprising a blood compartment and a dialysate compartment within which a dialysate flows.
- 60. (New) An apparatus according to claim 53, wherein said blood treatment element comprises a hemodialysis filter comprising a blood compartment and a dialysate compartment within which a dialysate flows, and a pre- or post-dilution node for the introduction of a replacement fluid.
- 61. (New) An apparatus according to claim 53, wherein said blood treatment element comprises a hemofiltration filter.
- 62. (New) An apparatus according to claim 53, wherein said blood treatment element comprises a hemofiltration filter and a pre- or post-dilution node for the introduction of a replacement fluid.
- 63. (New) An apparatus according to claim 53, wherein said control unit regulates the blood temperature in the extracorporeal blood circuit as a function of the first blood temperature and the reference temperature at predetermined time intervals.
- 64. (New) An apparatus according to Claim 53 or 63, wherein said control unit regulates the overall temperature as a function of the difference between the first blood temperature and the reference temperature.